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Farm ponds- A technology turning grey areas into green

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Abstract

Farm pond being a crucial component in watershed programs, help to conserve water better from the runoff during rainy season. The water thus collected can be used during drought periods in the dry land areas. This acts as an assured water supply source warding off crop failure due to mid-season and terminal droughts which are very common recurring climatic features in such areas. Hence, farm ponds can change the fate of the farmers as well as dry lands through proper conservation of a worthwhile resource: water.

Key words: Farm Pond, dry land, water conservation, watershed

Introduction

Farming is an occupation which is vulnerable to a set of environmental conditions. With climate change and escalated cultivation costs, the farmers are drowning in debts and are ending their lives which can be evident from alarming increase in farming suicide rates. The situation of dry land farmers is even worse. With poor availability of natural resources, they were subjected to grow limited crops whose productivity is unconditionally dependant on climate. It is well known fact that, 3 acres of dry land equals to 1 acre of irrigated land. Water being the immense factor playing a vital role. Irrigated agriculture has already seen spike in the productivity of food grains. But not in case of dry lands due to various reasons such as climatic limitations, plunging resources, poor farmers, lack of awareness, shortfall in proper credit facilities, lack of suitable technologies in particular to dry land areas, growing of similar kind of crops reducing the market demand etc. Thus, there is a scope for improving production from dry lands through adoption of appropriate technologies. Investing more science and innovation in to this area is highly demanded.

Water is the most important and limited resource in dry land/ grey areas. The dry land areas/ rainfed areas are characterised with intense rainfall and uneven distribution. This leads to loss of rain water

as runoff. It also leads to loss of fertile top soil leaving the land barren. If this runoff is collected and stored, it can be used for providing supplemental irrigation to the crops whenever they are facing water stress. Farm ponds are such storage structure which can collect runoff water and can be used subsequently.

Farm ponds are water bodies formed by the construction of a small dam across a waterway or by excavating or dug out. A farm pond typically consists of 3 important components such as the catchment area, storage structure and command area. Catchment area acts as the source of water. The land has to be treated here in such a way that the rainwater losing as runoff must be diverted into the pond. This can be done by sloping the land towards the pond and by creating channels/ proper runways. The farm pond can be constructed in the field at lower elevation so that all the water will drain into it automatically under intense rainfall conditions. The command area is the region where the farmer grows the crop. The water that is conserved in the pond must be used through micro-irrigation practices such as drip/sprinkler irrigation having high water use efficiency. Thus, same output can be obtained with the less amount of water used compared to other irrigation practices through reduced evapotranspiration losses.

Farm pond of size 100 to 300 m^3, 10 m X 10 m X 2.5 m with a side slope of 1.5: 1 can store around 30% of the runoff losses. But its adaptation is questionable because of few limitations in terms of seepage and evaporation losses from the ponds. These problems can be addressed by adopting few strategies. Seepage losses are loss of water collected in the ponds to the adjacent areas declining the total amount of water utilisable for crops. This is more pronounced in case of red soils. These losses can be controlled by plastering the pond walls with sealants such as soil + cement (8:1) mixture of 100 mm thickness which can reduce losses even up to 100%. Other materials such as cement-concrete, bricks, cuddapah slabs, bitumen clay etc. can also be used. Evaporation losses can be controlled by growing of tall and bushy trees on the bunds which can create shade on the water reducing the direct load of sunlight minimizing the evaporation losses. Creeping vegetation can also be grown on the bunds which can spread on water and reduce the losses.

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Typical farm pond with runway

Farm Pond lined with polythene sheet

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Conclusion

In rainfed areas, agricultural land with farm ponds produces more yield per unit area. Despite the fact that they come at a cost to the farmer, they add value to the land. These grey areas can be converted into green with the support of many watershed projects already functioning across the country, as well as the active engagement of farmers in such programmes.